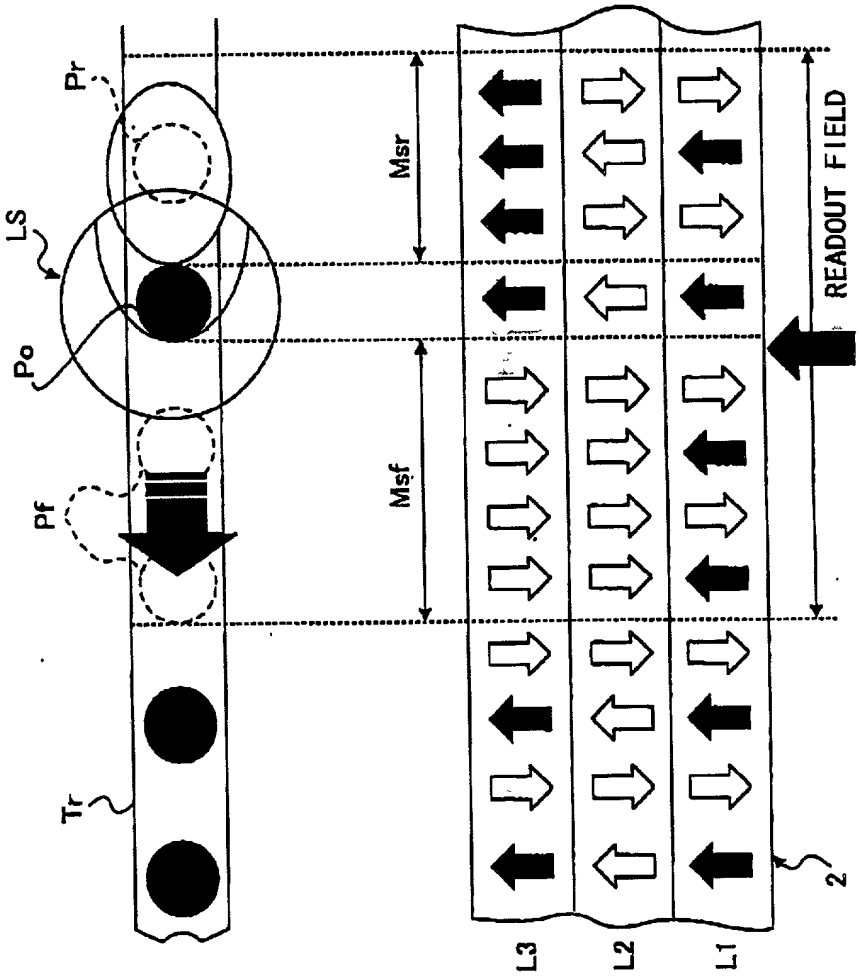


FIG. 1A

FIG. 1B

FIG. 2

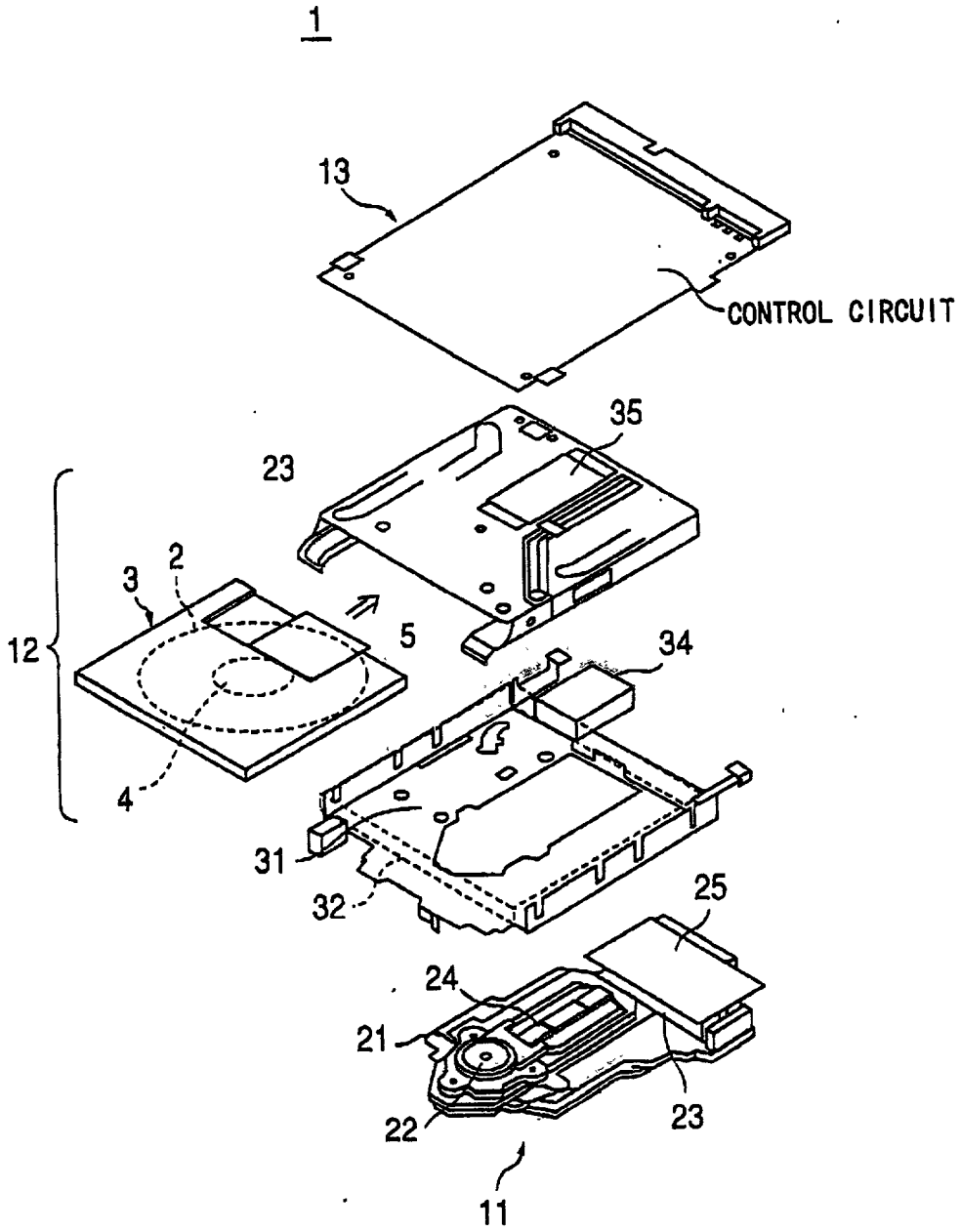


FIG. 3A

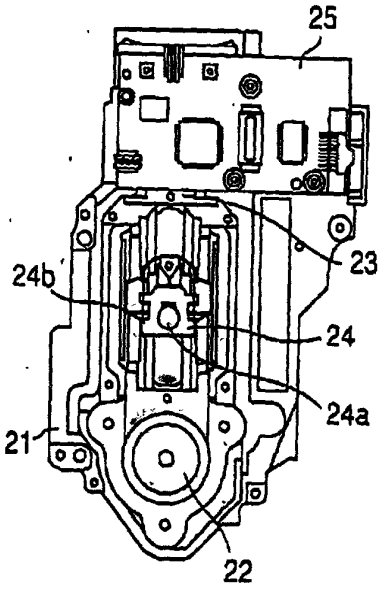


FIG. 3B

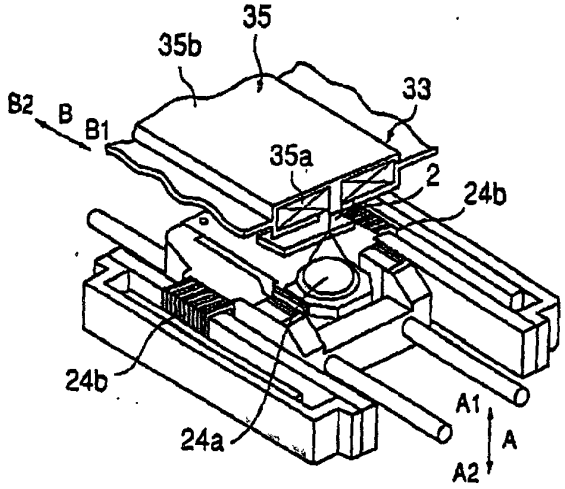


FIG. 3C

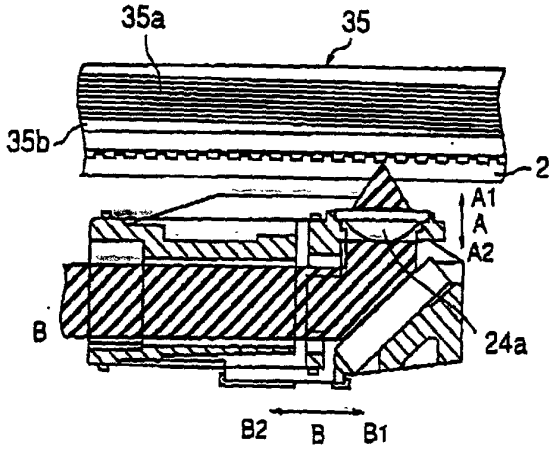


FIG.4

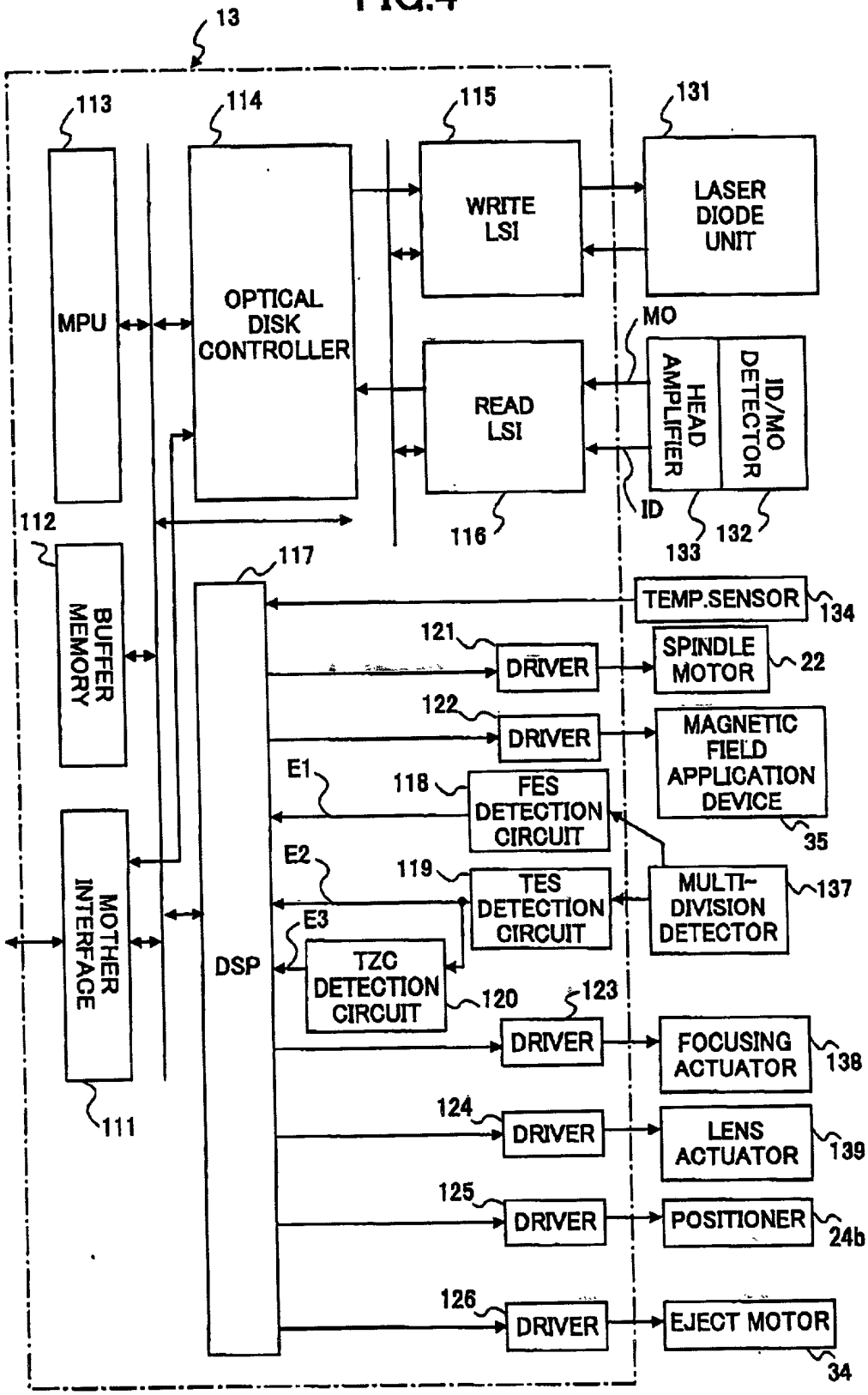

13
113
114
115
131
MPU
OPTICAL DISK CONTROLLER
WRITE LSI
LASER DIODE UNIT
MO
READ LSI
HEAD AMPLIFIER
ID/MO DETECTOR
ID
116
133
132
112
117
BUFFER MEMORY
TEMP.SENSOR
134
121
DRIVER
SPINDLE MOTOR
22
122
DRIVER
MAGNETIC FIELD APPLICATION DEVICE
35
E1
118
FES DETECTION CIRCUIT
E2
119
TES DETECTION CIRCUIT
MULTI-DIVISION DETECTOR
137
E3
MOTHER INTERFACE
DSP
TZC DETECTION CIRCUIT
120
123
DRIVER
FOCUSING ACTUATOR
138
124
DRIVER
LENS ACTUATOR
139
125
DRIVER
POSITIONER
24b
126
DRIVER
EJECT MOTOR
34
111

FIG. 5

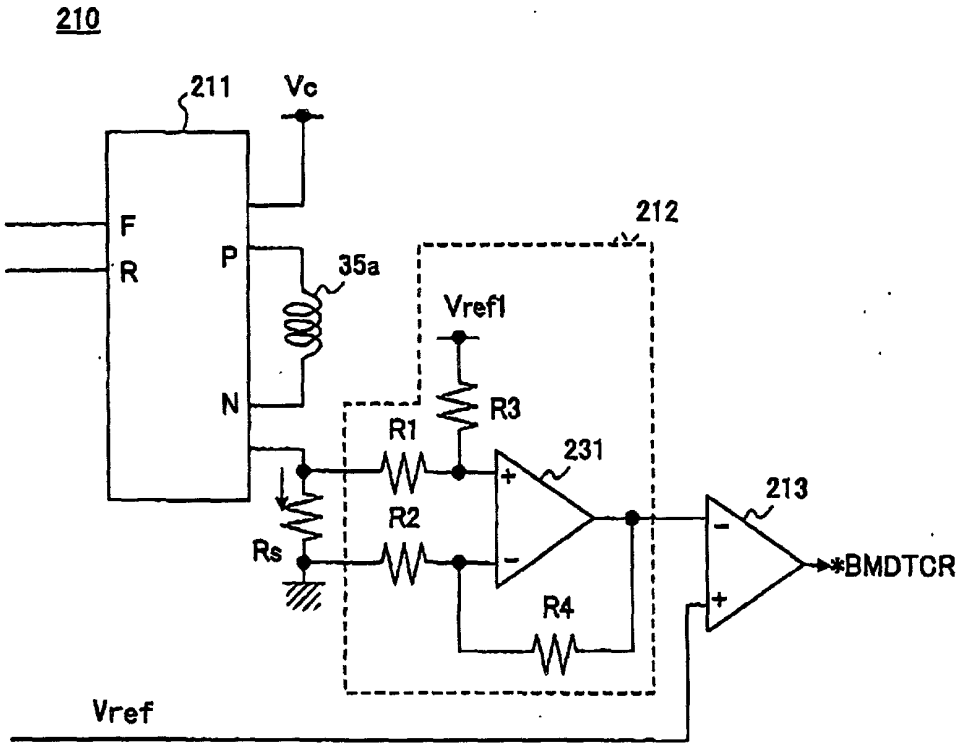


FIG.6

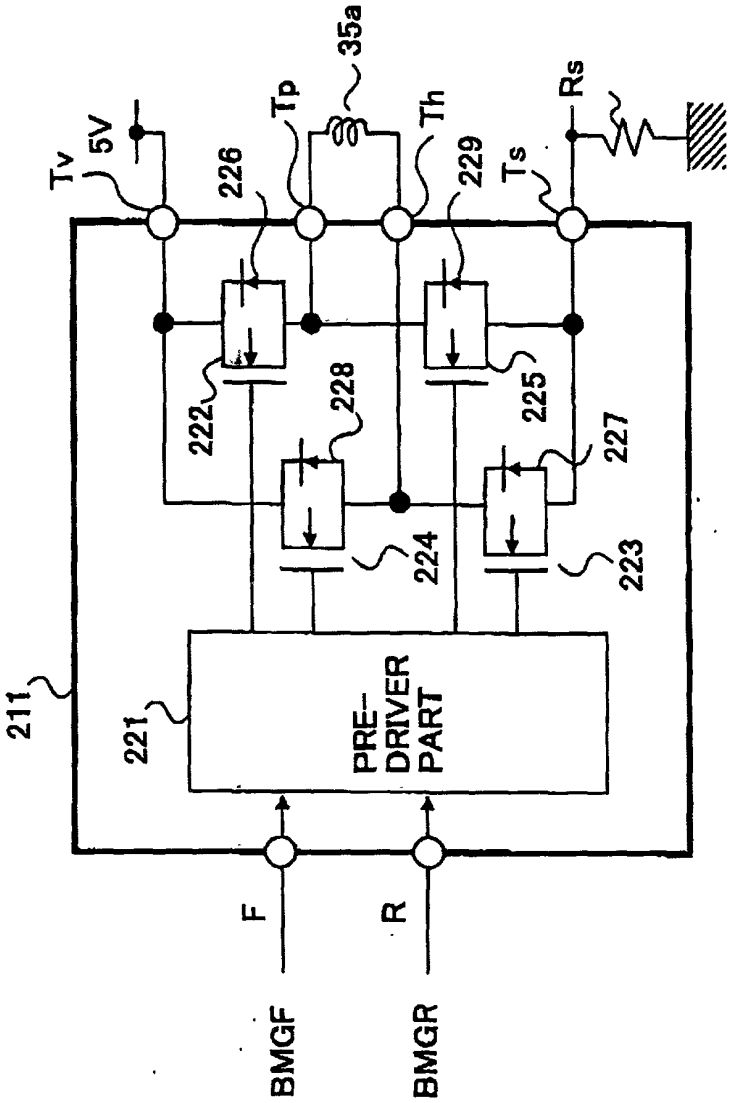

35a
Tv
5V
Tp
Th
Rs
Ts
226
229
222
228
225
227
224
223
211
221
PRE-
DRIVER
PART
F
R
BMGF
BMGR

FIG.7

BMGF	BMGR	P OUTPUT	N OUTPUT	NOTE
H	L	H	L	POSITIVE CHANGE(P→N)
L	H	L	H	NEGATIVE CHANGE(N→P)
L	L	L	L	SHORT BREAK

FIG.8

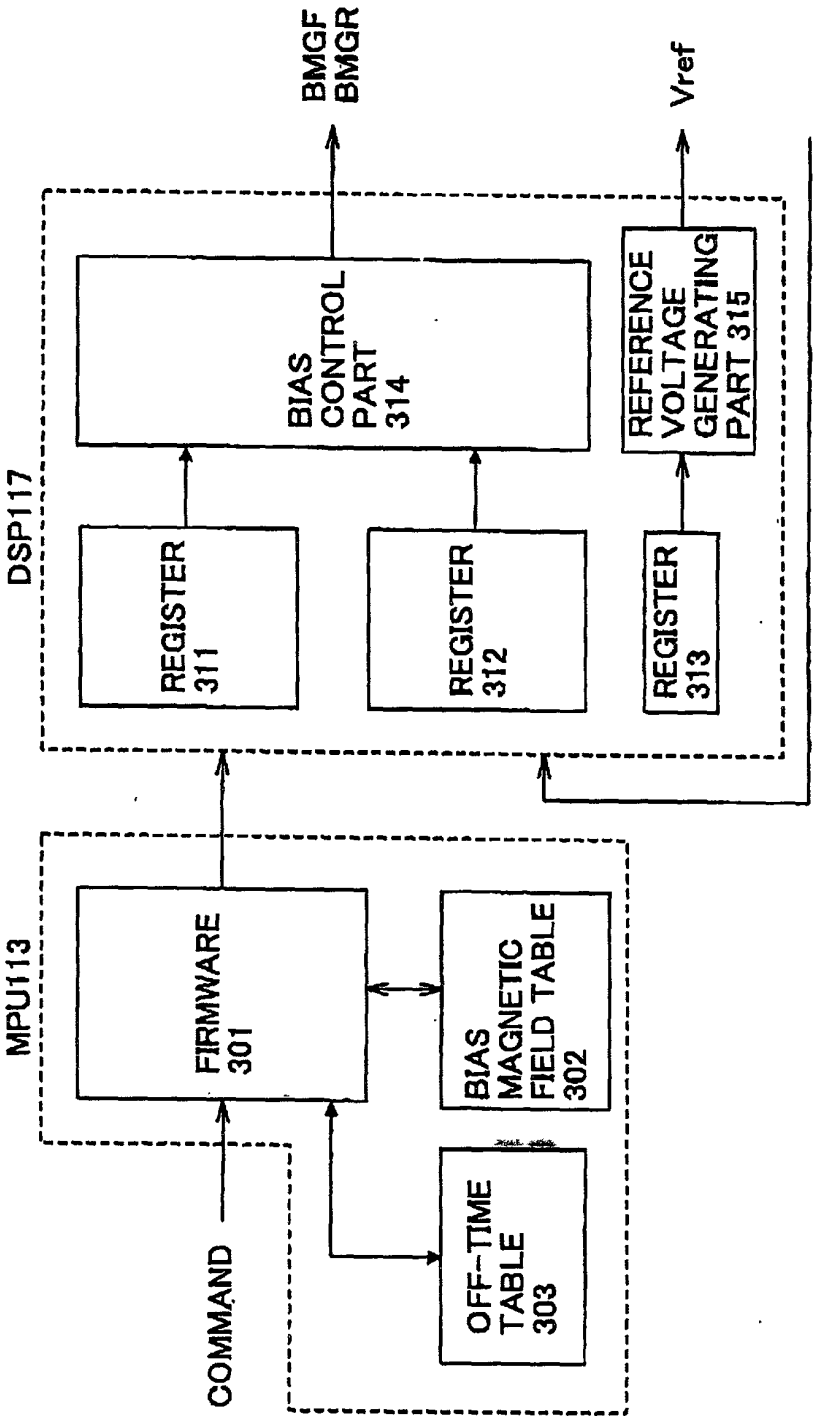

BMGF
BMGR
Vref
DSP117
BIAS CONTROL PART 314
REFERENCE VOLTAGE GENERATING PART 315
REGISTER 311
REGISTER 312
REGISTER 313
MPU113
FIRMWARE 301
BIAS MAGNETIC FIELD TABLE 302
OFF-TIME TABLE 303
COMMAND

FIG.9

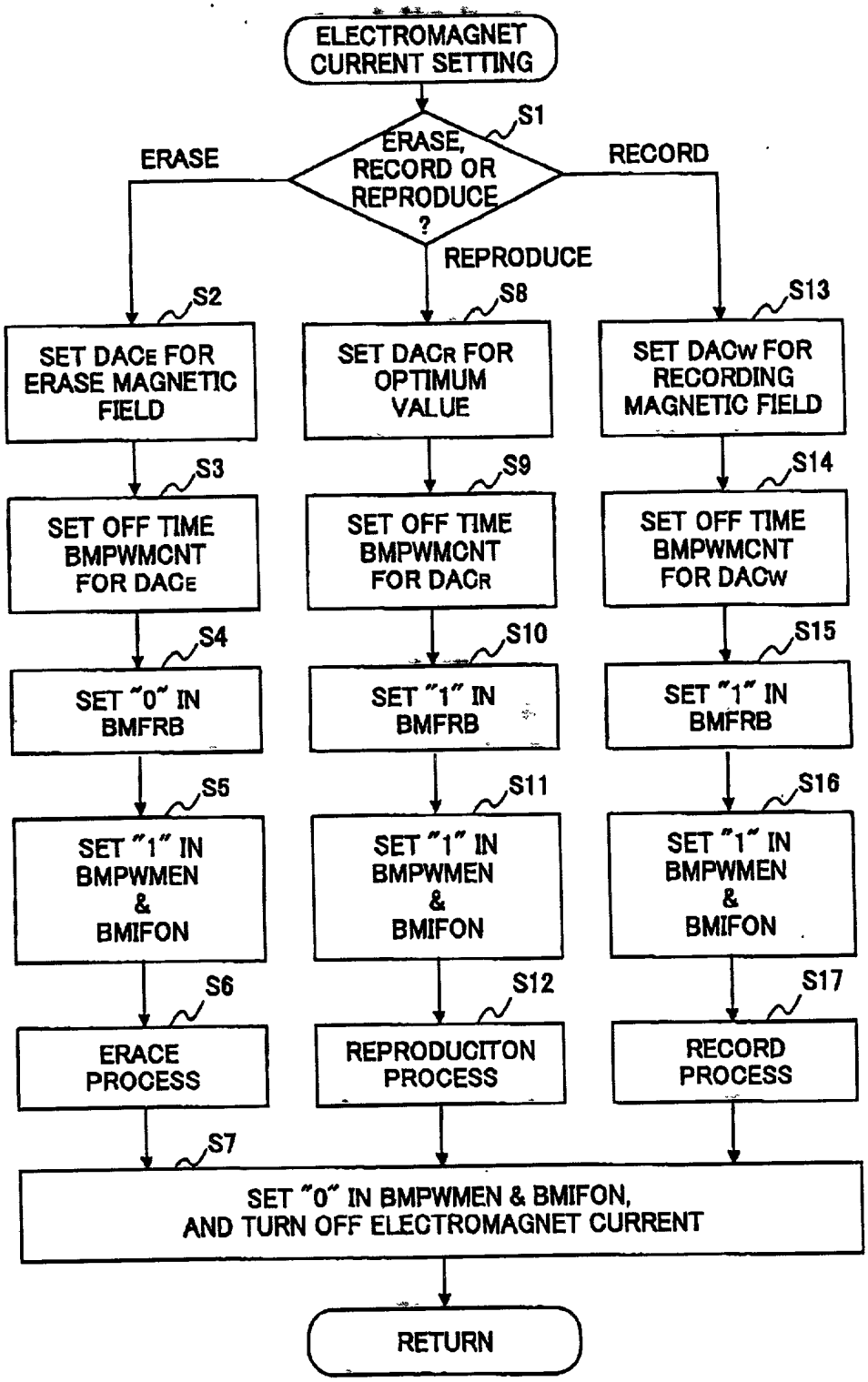

ELECTROMAGNET CURRENT SETTING
S1
ERASE, RECORD OR REPRODUCE ?
ERASE
REPRODUCE
RECORD
S2
SET DACE FOR ERASE MAGNETIC FIELD
S3
SET OFF TIME BMPWMCNT FOR DACE
S4
SET "0" IN BMFRB
S5
SET "1" IN BMPWMEN & BMIFON
S6
ERACE PROCESS
S8
SET DACR FOR OPTIMUM VALUE
S9
SET OFF TIME BMPWMCNT FOR DACR
S10
SET "1" IN BMFRB
S11
SET "1" IN BMPWMEN & BMIFON
S12
REPRODUCITON PROCESS
S13
SET DACW FOR RECORDING MAGNETIC FIELD
S14
SET OFF TIME BMPWMCNT FOR DACW
S15
SET "1" IN BMFRB
S16
SET "1" IN BMPWMEN & BMIFON
S17
RECORD PROCESS
S7
SET "0" IN BMPWMEN & BMIFON, AND TURN OFF ELECTROMAGNET CURRENT
RETURN

FIG.10A

ZONE NUMBER	ELECTROMAGNET ELECTRIC CURRENT			
	ERASE	RECORD	INITIAL VALUE FOR REPRODUCTION	CALIBRATION COEFFICIENT
Z1	I_E[mA] (DAC_E)	I_W[mA] (DAC_W)	I_{RZ1}[mA](DAC_{RZ1})	$\alpha 1$
Z2			I_{RZ2}[mA](DAC_{RZ2})	$\alpha 2$
Z3			I_{RZ3}[mA](DAC_{RZ3})	$\alpha 3$
Z4			I_{RZ4}[mA](DAC_{RZ4})	$\alpha 4$
Z5			I_{RZ5}[mA](DAC_{RZ5})	$\alpha 5$
Z6			I_{RZ6}[mA](DAC_{RZ6})	$\alpha 6$
Z7			I_{RZ7}[mA](DAC_{RZ7})	$\alpha 7$
Z8			I_{RZ8}[mA](DAC_{RZ8})	$\alpha 8$
Z9			I_{RZ9}[mA](DAC_{RZ9})	$\alpha 9$
Z10			I_{RZ10}[mA](DAC_{RZ10})	$\alpha 10$
Z11			I_{RZ11}[mA](DAC_{RZ11})	$\alpha 11$

FIG.10B

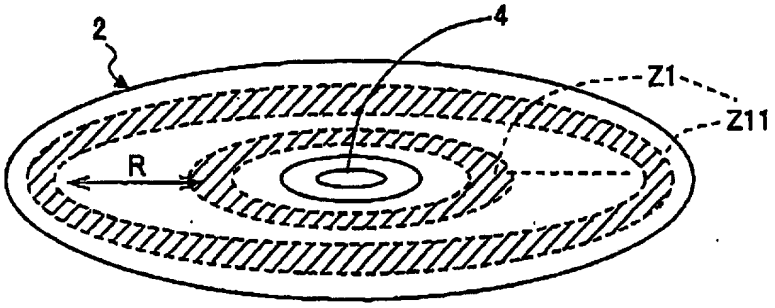
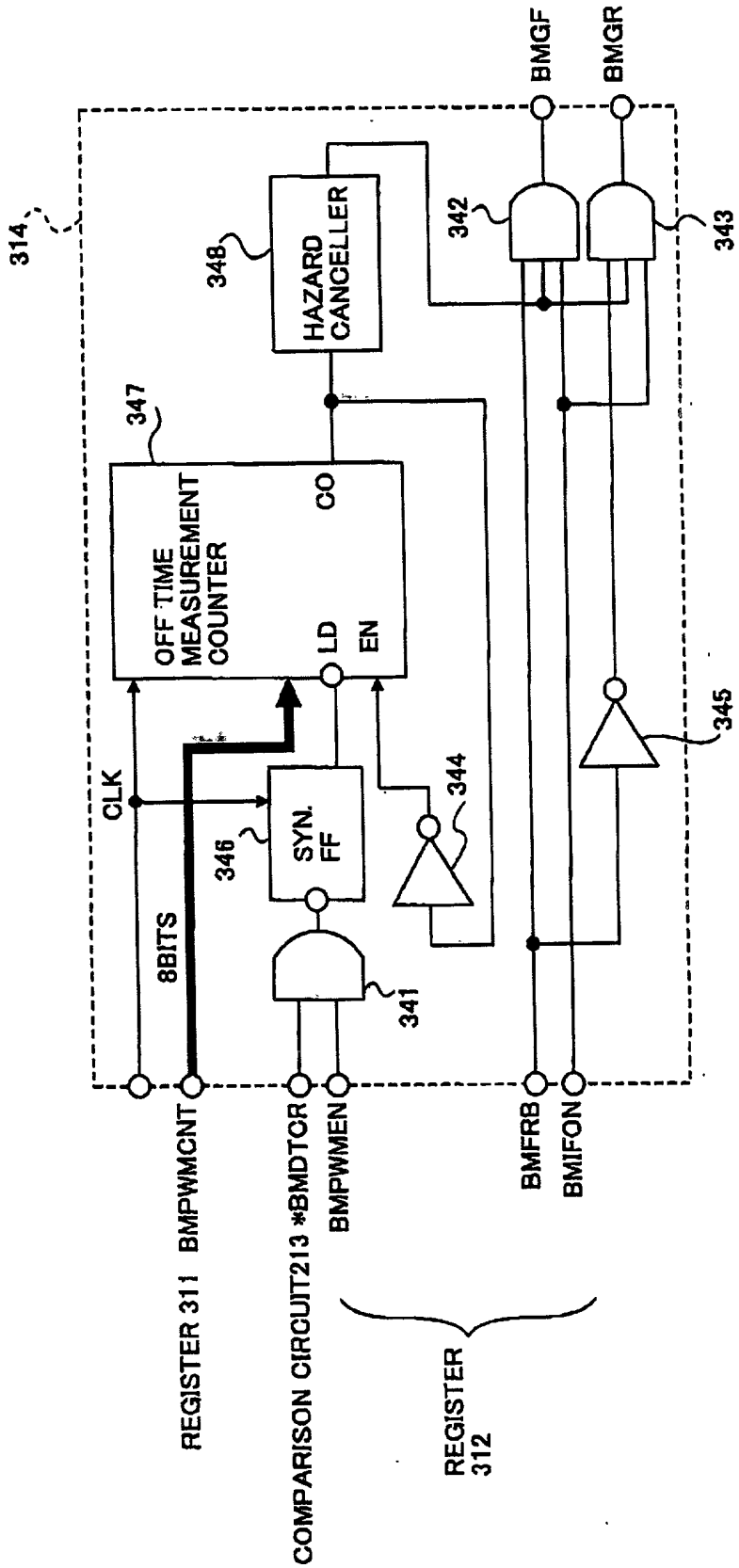


FIG. 11

303

BLAS_DAC	BMPWMCNT
0x00~0x0f	0x18
0x10~0x1f	0x10
0x20~0x3f	0x08
0x40~0x7f	0x04
0x80~0xff	0x01

FIG.12


314
348
HAZARD CANCELLER
342
343
BMGF
BMGR
347
OFF TIME MEASUREMENT COUNTER
CO
LD
EN
CLK
8BITS
346
SYN. FF
344
345
341
REGISTER 311
BMPWMCNT
COMPARISON CIRCUIT213
*BMDTOR
BMPWMEN
REGISTER 312
BMFRB
BMIFON

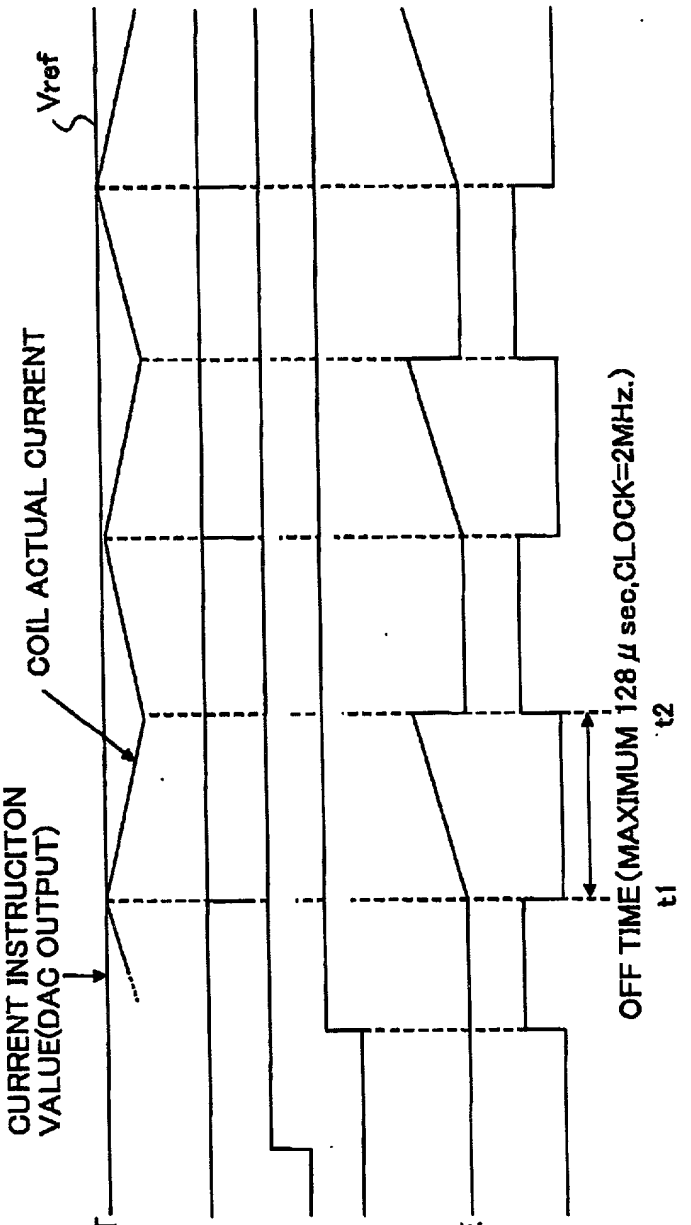


FIG.13A FIG.13B FIG.13C FIG.13D FIG.13E FIG.13F

FIG.14

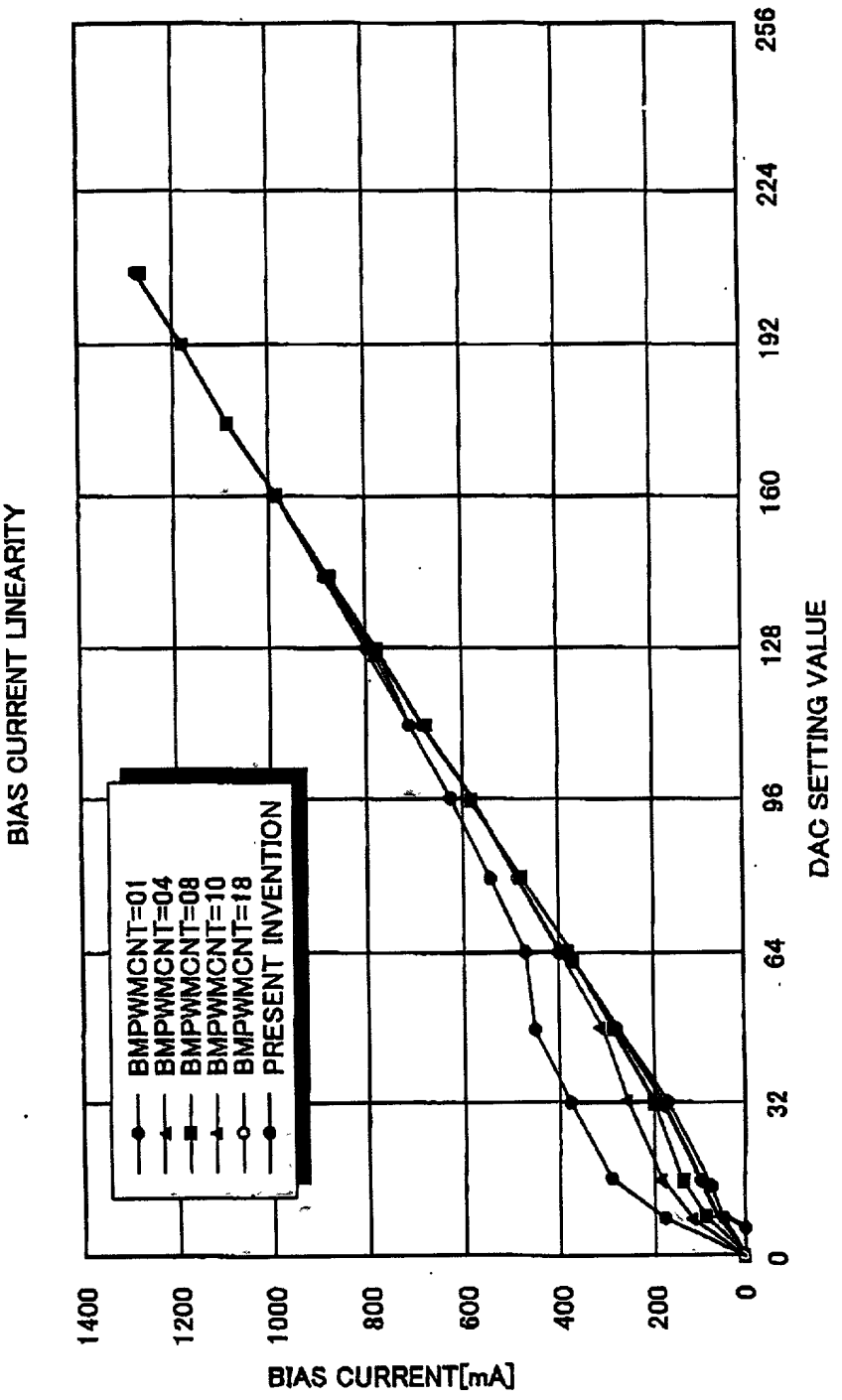

BIAS CURRENT LINEARITY
BMPWMCNT=01
BMPWMCNT=04
BMPWMCNT=08
BMPWMCNT=10
BMPWMCNT=18
PRESENT INVENTION
1400
1200
1000
800
600
400
200
0
BIAS CURRENT[mA]
0
32
64
96
128
160
192
224
256
DAC SETTING VALUE

FIG.15

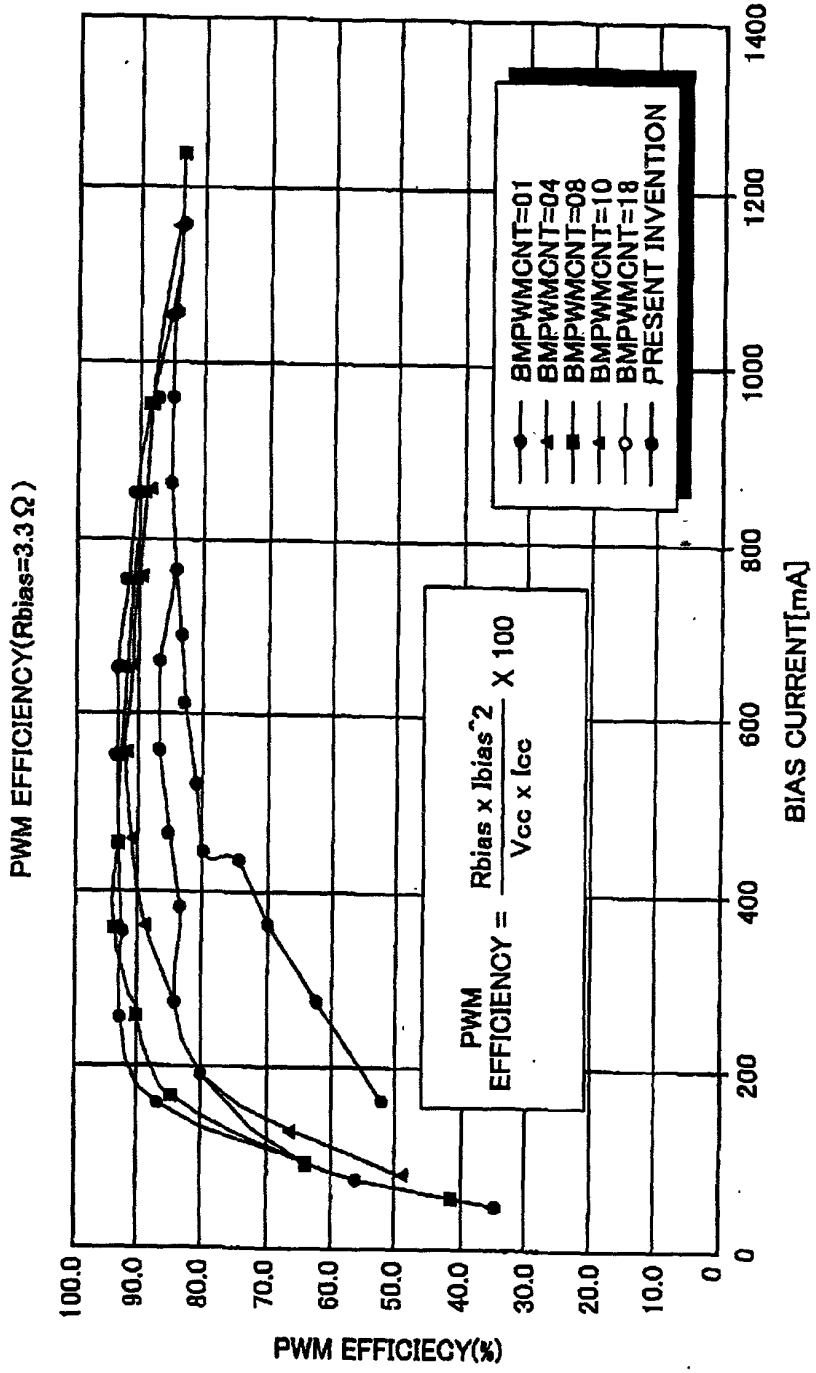
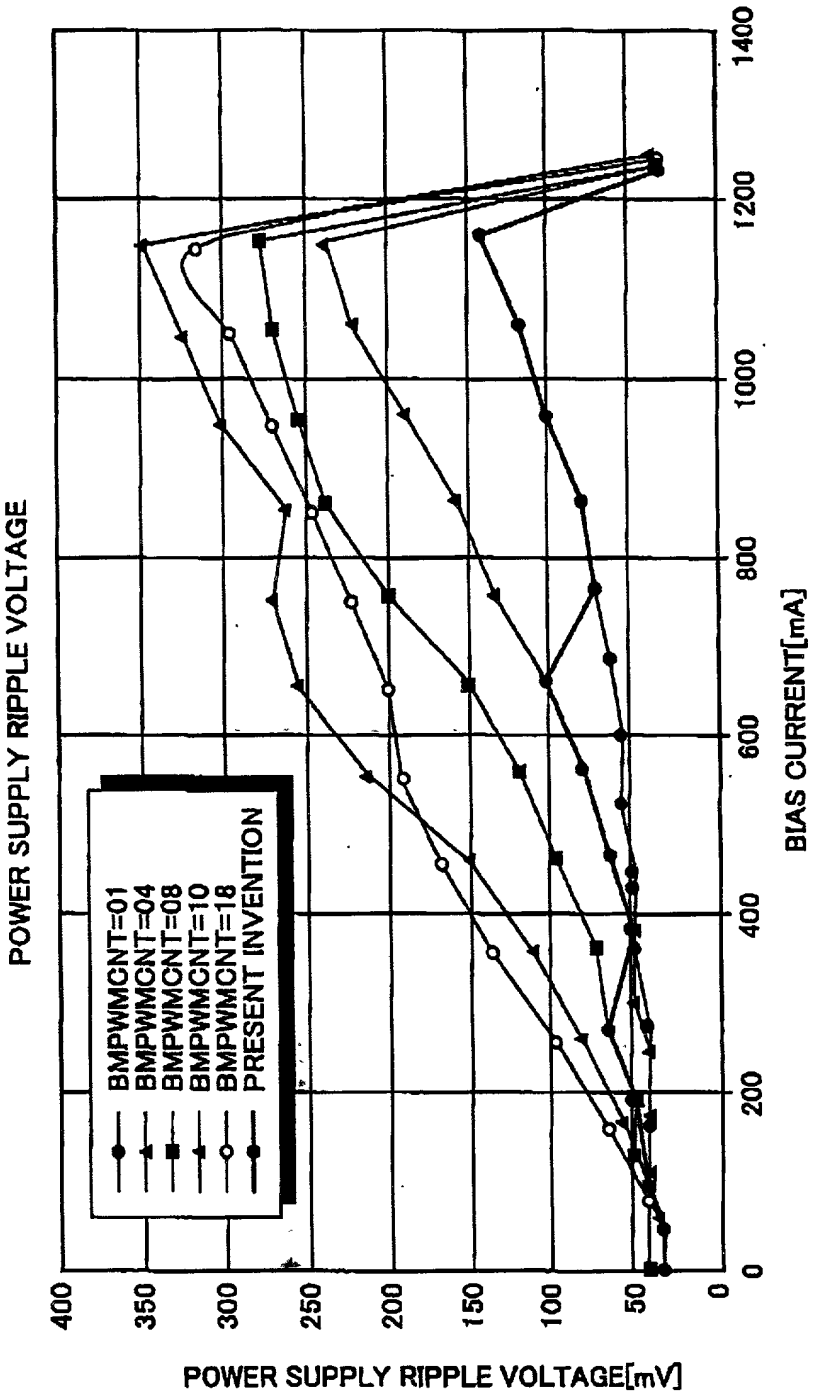

PWM EFFICIENCY(Rbias=3.3Ω)
PWM EFFICIECY(%)
BIAS CURRENT[mA]
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
200
400
600
800
1000
1200
1400
BMPWMCNT=01
BMPWMCNT=04
BMPWMCNT=08
BMPWMCNT=10
BMPWMCNT=18
PRESENT INVENTION
PWM EFFICIENCY = Rbias x Ibias^2 / Vcc x Icc X 100

FIG.16


POWER SUPPLY RIPPLE VOLTAGE
BIAS CURRENT[mA]
POWER SUPPLY RIPPLE VOLTAGE[mV]
BMPWMCNT=01
BMPWMCNT=04
BMPWMCNT=08
BMPWMCNT=10
BMPWMCNT=18
PRESENT INVENTION
400
350
300
250
200
150
100
50
0
1400
1200
1000
800
600
400
200
0